

It is apparent from these tables that there is a considerable amount of personality among the different observers in determining the position of the centre of the Sun in N.P.D., but the effects are not so general as in the case of the R.A. ; we have only exhibited them here to show their existence, for which there does not appear to be any reasonable cause, as there is little or no motion in the direction of measurement, and otherwise the conditions are nearly the same for both limbs. The still large remaining discordances in the correction to the equinox, after allowing for the personality of observers in making R.A. observations, and considering the apparently small mean annual error in the N.P.D. Greenwich observations, appear to suggest some periodical error in the tables or observations, which may form, we hope, the subject of a future communication.

Photograph of the Nebulæ M 78 and H IV. 36 Orionis.
By Isaac Roberts, D.Sc., F.R.S.

The photograph of the nebulæ M 78 and H IV. 36 *Orionis*, R.A. $5^h 41^m$, Decl. $0^\circ 1'$ north, was taken with the 20-inch reflector on 1894 January 28, with exposure of the plate during three hours, and the copy now presented is enlarged to the scale of 1 millimetre to 24 seconds of arc.

The nebulæ are Nos. 2,068 and 2,071 in the *New General Catalogue*, and Nos. 1,267, 1,270 in the *General Catalogue*.

The nebula M 78 (*N. G. C.* No. 2,068) is described by Sir J. Herschel as bright, large, wispish, very gradually much brighter in the middle, three stars involved, barely resolvable. In the *Phil. Trans.* 1833, pl. xii., fig. 36, a drawing of it is given which, in outline, resembles the central part of the nebulosity. The nebula H IV. 36 (*N. G. C.* No. 2,071) is described as a star with very faint large *chevelure*.

Lord Rosse (*Observations of Nebulæ and Clusters of Stars*, p. 51) gives the results of nine observations made between the years 1850 and 1877, and states that a "spiral arrangement is sufficiently seen to confirm former observations." A marginal sketch is given, and a drawing on pl. i., fig. 5 ; but they are not like the photograph, and they quite fail to indicate the form of the nebula as it is there shown.

The photograph shows the central part of the nebula as a dense cloud with a well-defined margin on the n.p. side, and the three stars referred to by Herschel and Rosse are shown involved in the nebulosity. The star on the northern edge has a faint companion, and faint star-like condensations are also seen involved in the nebulosity. There are flocculent clouds of nebulosity surrounding the dense central part, with wide dark spaces between them, which the descriptive matter and the drawings by Sir J. Herschel and Lord Rosse fail to indicate.

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The nebula H IV. 36 (*G. C.* 1,270) has a stellar nucleus, with a small companion star close to it on the south side, and this double nucleus is surrounded by cloud-like streaky nebulosity.

The distance between the centres of the nebulae is about 15 minutes of arc, and there are indications that the two nebulae are connected together with very faint nebulosity, but there is no spiral form (as suggested by Lord Rosse) visible in either of them.

The sky within a radius of about half a degree of these nebulae is remarkably void of stars, but beyond this distance, both *preceding* and *following*, the stars are crowded on the plate.

Photograph of the Nebula M 74 Piscium.

By Isaac Roberts, D.Sc., F.R.S.

The photograph of the nebula M 74 *Piscium*, R.A. $1^{\text{h}} 31^{\text{m}}$, Decl. $15^{\circ} 15'$ north, was taken with the 20-inch reflector on 1893 December 9, with exposure of the plate during three hours and forty minutes, and the copy now presented is enlarged to the scale of 1 millimetre to 15 seconds of arc.

The nebula is No. 628 in the *New General Catalogue* and 372 in the *General Catalogue*.

Sir J. Herschel (*G. C.* 372, p. 52) states as the result of eleven observations that it is a globular cluster, faint, very large, round, pretty suddenly much brighter in the middle, partially resolved.

Lord Rosse (*Phil. Trans.* 1861, p. 711) designates it as a spiral nebula with the centre formed of stars, and several stars visible through the nebula. A marginal sketch shows the spiral form, and in the *Observations of Nebulae and Clusters of Stars*, p. 21, another marginal sketch is given which shows a nucleus and five stars involved in the spirals.

The photograph shows the nebula to be a very perfect spiral, with a central stellar nucleus and a 15th mag. star close to it on the south side. The convolutions of the spiral are studded with many stars and star-like condensations, and on the *north preceding* side there is a partial inversion of one of the convolutions, which conveys the idea of some irregular disturbing cause having interfered with the regular formation of a part of that convolution.

The photograph cannot be adequately described, it must be examined before it can be fully appreciated.
